

In the Claims

1. (Currently amended) An oligonucleotide which hybridizes to at least a part of a non-transcribed spacer sequence (NTS) between rRNA genes of an organism of the genus *Perkinsus* being assayed, wherein said organism is *Perkinsus atlanticus* having contains the NTS nucleotide base sequence consisting of selected from the group consisting of the sequences of SEQ ID NO. 18, and wherein the oligonucleotide hybridizes to the NTS under stringent annealing conditions for species-specific detection.
2. (Currently amended) A method of making an oligonucleotide for use in assaying *Perkinsus atlanticus* a target organism of the genus *Perkinsus* comprising the steps of:
 - (i) extracting DNA from said target organism
 - (ii) isolating from said DNA a non-transcribed spacer sequence flanked by rRNA genes;
 - (iii) sequencing said non-transcribed spacer sequence (NTS), wherein the non-transcribed spacer nucleotide sequence consists of SEQ ID NO. 18; and
 - (iv) synthesizing an oligonucleotide that hybridizes to at least a part of the non-transcribed spacer nucleotide sequence having a nucleic acid sequence of SEQ ID NO. 18, wherein the oligonucleotide hybridizes to the NTS under stringent annealing conditions for species-specific detection. (see page 17, last sentence of paragraph)
3. (Currently amended) A kit for determining the identity *Perkinsus atlanticus* in a sample of species of a microorganism of the genus *Perkinsus*, comprising a container having outwardly directed PCR primer pairs that hybridizes to a part of a non-transcribed spacer sequence flanked by rRNA genes, wherein the non-transcribed spacer sequence is said primer pairs, having a nucleic acid sequence selected from the group consisting of sequences of SEQ ID NO. 18, and wherein the primer pair comprise a primer that hybridizes to a sense strand and a primer that hybridizes to an anti-sense strand of the non-transcribed spacer nucleotide sequence under stringent annealing conditions for species-specific detection.
- 4.-8. (Cancelled)
9. (Original) The oligonucleotide of claim 1 wherein said oligonucleotide is one of a pair of

PCR primers, or complement thereof.

10. (Original) The oligonucleotide of claim 9, wherein said oligonucleotide is between about 10 to 35 nucleotides in length.

11. (Original) The oligonucleotide of claim 9, wherein said oligonucleotide is between about 15 to 24 nucleotides in length.

12. (Currently amended) The oligonucleotide of claim 9 wherein said PCR primers or complement thereof are selected from the group consisting of:

ATG CTA TGG TTG GTT GCG GAC C (SEQ ID NO. 8)

GTA GCA AGC CGT AGA ACA GC (SEQ ID NO. 9)

~~TAG TAC CCG CTC ATT GTG G (SEQ ID NO. 12)~~

~~TGC AAT GCT TGC GAG CT (SEQ ID NO. 13)~~

~~AGT TGG ATT TCT GCC TTG GGC G (SEQ ID NO. 14); and~~

~~ACC AGG TCC AGA CAT AGG AAG G (SEQ ID NO. 15).~~

13. (Previously presented) The oligonucleotide of claim 1, wherein said oligonucleotide is detectably labeled.

14. (Cancelled)

15. (Currently amended) The oligonucleotide of claim 1, wherein ~~said nucleic acid sequence of the~~ oligonucleotide has a nucleic acid sequence that is exactly complementary to at least part of said non-transcribed spacer nucleotide sequence.

16. (Currently amended) The method of claim 2, wherein the isolating step for said non-transcribed spacer sequence comprises is isolated by amplifying said non-transcribed spacer nucleotide sequence using primers, or complement thereof that preferentially hybridize to said flanking rRNA genes.

17. (Currently amended) The method of claim 2, wherein the isolating step for said non-transcribed spacer ~~is isolated by comprises~~ the steps of digesting said extracted DNA with restriction enzyme, creating a library, and identifying said non-transcribed spacer nucleotide sequences within said library using a probe specific that preferentially hybridize to at least one of said flanking rRNA genes ~~for one of said rRNA genes~~.

18. (Original) The method of claim 2, wherein said oligonucleotide is one of a pair of PCR primers or complement thereof.

19. (Cancelled)

20. (Currently amended) The kit of claim 3 wherein said PCR primers pairs or complement thereof are selected from the group consisting of SEQ ID NO. 8 and SEQ ID NO. 9, ~~SEQ ID NO. 12, SEQ ID NO. 13, SEQ ID NO. 14, SEQ ID NO. 15 and SEQ ID NO. 19.~~

21. (Currently amended) An oligonucleotide which hybridizes to a non-transcribed spacer sequence between rRNA genes of an organism of the genus *Perkinsus* being assayed, wherein said organism of genus *Perkinsus* contains a nucleotide base sequence selected from the group consisting of the sequences of SEQ ID NOS. 1, 2, and 3, wherein the oligonucleotides are selected from SEQ ID NO. 12, SEQ ID NO. 13, SEQ ID NO. 14, SEQ ID NO. 15 and SEQ ID NO. 19.

22. (Previously presented) The oligonucleotide of claim 21 wherein said organism is *Perkinsus Andrews* comprising SEQ ID NO. 2.

23. (Previously presented) The oligonucleotide of claim 21, wherein said organism is *Perkinsus mackin* comprising SEQ ID NO. 3.

24. (Previously presented) The oligonucleotide of claim 21 wherein said oligonucleotide is one of a pair of PCR primers, or complement thereof.

25. (Previously presented) The oligonucleotide of claim 24, wherein said oligonucleotide is between about 10 to 35 nucleotides in length.

26. (Previously presented) The oligonucleotide of claim 24, wherein said oligonucleotide is between about 15 to 24 nucleotides in length.
27. Cancelled
28. (Currently amended) An oligonucleotide which hybridizes to at least a part of a non-transcribed spacer sequence between rRNA genes of *Perkinsus Marinus*, wherein the non-transcribed spacer nucleotide base sequence consists of SEQ ID NO. 24 or 25, and wherein the oligonucleotide hybridizes to the NTS under stringent annealing conditions for species-specific detection. The oligonucleotide of claim 21, wherein said nucleotide base sequence has type I or type II NTS sequences of (SEQ ID NOS. 24 or 25).
- 29-30. Cancelled
31. (Previously presented) A kit for determining the identity of species of a microorganism of the genus *Perkinsus*, comprising a container having outwardly directed PCR primer pairs to a non-transcribed spacer sequence flanked by rRNA genes, said primer pairs, having a nucleic acid sequence selected from the group consisting of sequences of SEQ ID NO. 12, SEQ ID NO. 13, SEQ ID NO. 14, SEQ ID NO. 15 and SEQ ID NO. 19.
32. (New) The oligonucleotide of claim 28, wherein the oligonucleotide is selected from the group consisting of SEQ ID NO: 20, SEQ ID NO: 21, and SEQ ID NO: 23.